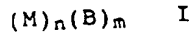


We claim:

1. The use of  $\alpha$ -lipoic acid or  $\alpha$ -dihydrolipoic acid for increasing the bioavailability of mineral salts.
2. The use as claimed in claim 1, wherein at least one mineral salt is used in combination with  $\alpha$ -lipoic acid or  $\alpha$ -dihydrolipoic acid.
3. The use as claimed in claim 2, wherein mineral salts of the formula I are used,



where

M is a monovalent to trivalent physiologically acceptable metal cation,

B is a monovalent to trivalent physiologically acceptable anion,

n is 1, 2 or 3 and

m is 1, 2 or 3,

where the subscripts n and m correspond to the valency and charge equalization of the mineral salt of the formula I.

4. The use as claimed in claim 1 or 2, wherein the combination used is metal  $\alpha$ -lipoates, metal  $\alpha$ -dihydrolipoates or metal- $\alpha$ -lipoic acid complexes.

5. The use as claimed in claim 4, wherein the combination used is metal  $\alpha$ -lipoates, metal  $\alpha$ -dihydrolipoates or metal- $\alpha$ -lipoic acid complexes of the formula II,



where

M is a monovalent to trivalent physiologically acceptable metal cation or a mixture of monovalent to trivalent physiologically acceptable metal cations,

5 ~~Lp is racemic  $\alpha$ -lipoic acid or  $\alpha$ -dihydrolipoic acid, (R)- or (S)- $\alpha$ -lipoic acid or (R)- or (S)- $\alpha$ -dihydrolipoic acid, racemic  $\alpha$ -lipoate or dihydro- $\alpha$ -lipoate or (R)- or (S)- $\alpha$ -lipoate or (R)- or (S)-dihydro- $\alpha$ -lipoate,~~

5 A is a physiologically acceptable monovalent or divalent anion,

w is 1 or 2

10 x is 1, 2, 3 or 4,

y is 0, 1, 2 or 3 and

15 z is 0, 1, 2, 3, 4, 5 or 6,

where the subscripts w, x and y correspond to the valency and charge equalization of the compound of the formula II.

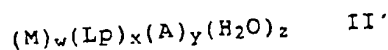
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6. ~~The use as claimed in one of claims 1 to 5, wherein the  $\alpha$ -lipoic acid used is (R)- $\alpha$ -lipoic acid or the  $\alpha$ -lipoate used is (R)- $\alpha$ -lipoate.~~

25 7. ~~A preparation comprising at least one mineral salt and (R)- $\alpha$ -lipoic acid or (S)- $\alpha$ -lipoic acid.~~

8. ~~A metal  $\alpha$ -lipoate, metal  $\alpha$ -dihydrolipoate or metal- $\alpha$ -lipoic acid complex of the formula II',~~

30



where

35 M is a monovalent to trivalent physiologically acceptable metal cation or a mixture of monovalent to trivalent physiologically acceptable metal cations,

40 Lp is racemic  $\alpha$ -lipoic acid or  $\alpha$ -dihydrolipoic acid, (R)- or (S)- $\alpha$ -lipoic acid or (R)- or (S)- $\alpha$ -dihydrolipoic acid, racemic  $\alpha$ -lipoate or dihydro- $\alpha$ -lipoate or (R)- or (S)- $\alpha$ -lipoate or (R)- or (S)-dihydro- $\alpha$ -lipoate,

45 A is a physiologically acceptable monovalent or divalent anion,

x is 1, 2, 3 or 4,

$z$  is 0, 1, 2, 3, 4, 5 or 6,

the following compounds are excluded:

where

Lip<sub>rac</sub><sup>-</sup> is monovalent negative racemic α-lipoate,

DHL<sub>rac</sub><sup>2-</sup> - is divalent negative racemic α-dihydrolipoate.

10. A preparation comprising metal  $\alpha$ -lipoates, metal  $\alpha$ -dihydrolipoates or metal- $\alpha$ -lipoic acid complexes as claimed in claim 5 and  $\alpha$ -lipoic acid or  $\alpha$ -dihydrolipoic acid.

40 12. The use of the metal  $\alpha$ -lipoates, metal  $\alpha$ -dihydrolipoates or metal- $\alpha$ -lipoic acid complexes as claimed in claim 5 in cosmetic formulations.

45 13. A metal  $\alpha$ -lipoate, metal  $\alpha$ -dihydrolipoate or metal- $\alpha$ -lipoic acid complex as claimed in claim 5 for use as drugs.

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840.

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14. The use of the metal  $\alpha$ -lipoates, metal  $\alpha$ -dihydrolipoates or metal- $\alpha$ -lipoic acid complexes as claimed in claim 5 for preparing a drug for treating disorders in which lipoic acid has a therapeutic or prophylactic effect and there is a mineral salt deficiency.

15. The use of the metal  $\alpha$ -lipoates, metal  $\alpha$ -dihydrolipoates or metal- $\alpha$ -lipoic acid complexes as claimed in claim 5 in accordance with claim 14 for treating diabetes, tumors, HIV infections, AIDS, renal insufficiency, malnutrition, protein-energy malnutrition and mineral deficiencies.

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